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Scab of Wheat

Purdue University Cooperative Extension Service

on the farm

Control PLANT DISEASES

Mimeo BP 5-5
Revised

Scab of Wheat

Wheat scab alarms many Indiana wheat farmers because of its striking appearance on growing and ripening wheat. The fungus causing wheat scab, Gibberella zeae, also attacks barley, oats, rye, wild rye, crabgrass, quackgrass, foxtail and several other native grasses; it has also been reported to occur on clover, alfalfa, sweet potato and some plants in the parsley family.

The wheat scab fungus causes seedling blight, root rot, crown rot, stem blight and scab or head blight. Damage varies greatly from year to year and is associated with weather conditions that occur after wheat heads emerge. If the weather is dry when the heads are in flower, little damage will result from scab. However, if continued high humidity occurs during the 7 to 10 day period when the wheat flowers are present, chances are good that mature wheat heads will be seriously damaged by scab.

SYMPTOMS AND CAUSE

The most noticeable symptom of wheat scab is premature ripening or bleaching of one or more spikelets, giving the wheat head a whitened appearance. Usually, the entire head is not involved, but in severe cases, the top half of the head may be destroyed.

When wheat is in the dough stage, infected spikelets turn light yellow--a sharp contrast to the healthy green color of normal spikelets. As the wheat ripens, these spikelets turn white. And in wet weather, a light pink or salmon color appears at the base of the spikelets or along the edge of the glumes. Scab-infected heads are usually scattered randomly throughout the field.

At harvest time, infected spikelets become speckled with small, blue-black dots. These are the spore-bearing structures of the scab fungus.

The wheat scab fungus, Gibberella zeae, exists either as a parasite of living plants or as a saprophyte on dead wheat stems. In the fall a great many spore-producing bodies are found on old wheat stubble, and in the spring on corn stalks left in the field. Scab spores from these sources can cause infection of wheat heads during the blossoming period while fresh spores from infected spikelets can be blown by winds and rain to infect other heads.

The scab fungus also survives as spores on the surface of grain from infected heads. Such grain, when used for seed, can result in seedling blight. Wheat seedlings attacked by the scab fungus are stunted, yellow and ultimately die. The roots are found to be rotted, reddish brown and often covered with a gray to pink mold. In some cases, infected seedlings continue to live, but do not stool normally and produce only a single stem with a small head containing shrivelled grain.

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Occasionally, the scab fungus will cause a root rot or crown rot as wheat approaches maturity. Sometimes it will also attack wheat plants at the stem joints or leaf sheath, causing the parts above the infected joints to die or produce empty, bleached heads. This stem blight is often mistaken for wheat jointworm damage.

CONTROL MEASURES

To prevent loss and damage from wheat scab, follow these sanitation and seed treatment suggestions:

1. Plow under or burn all infected wheat stubble, straw, corn stalks and rotten corn ears that may carry and spread the wheat fungus.

2. If possible, follow a rotation system in which wheat does not directly follow corn.

3. Thoroughly clean all seed wheat to remove shrivelled grain that may carry spores of the scab fungus.

4. If practical, delay seeding until soil temperatures are 60°F or less. This lessens the chances of serious seedling blight damage.

5. Treat seed with any one of the chemicals listed in the table below.

Even though, in some season, certain wheat varieties may appear to be scab resistant, in other years they can be damaged seriously. None of the standard Indiana wheat varieties are constantly resistant to wheat scab.

Table 1. Seed treatment chemicals for wheat.

Chemical	Rate	Form	Equipment needed
	oz/bu		
Ceresan M	0.5 oz	Dust	Dust or slurry treaters
Ceresan 75	0.75 fl oz	Liquid	Ready-mix treaters
Ceresan 100	0.5 fl ox	Liquid	Slurry or mist-type treaters
Ceresan 200	0.25 fl oz	Liquid	Slurry treaters
Chipcote 25	0.25 fl oz	Liquid	Slurry treaters
Chipcote 75	0.75 fl oz	Liquid	Ready-mix treaters
Ortho LM	0.75 fl oz	Liquid	Slurry or ready-mix treaters
Ortho LM (Conc.)	0.25 fl oz	Liquid	Slurry treaters
Ortho LM (Dry)	0.5 oz	Dust	Dust or slurry treaters
Panogen 15	0.75 fl oz	Liquid	Ready-mix or mist-type treaters
Panogen 42	0.25 fl oz	Liquid	Slurry treaters

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Figure 1. Typical wheat scab symptoms: healthy head at far left; infected heads on right. Note bleached spikelets on head second from the left, and completely bleached, empty head on far right. (Courtesy University of Illinois)